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| D:\QQfile\691332027\Image\Group\Image5\MA@T]F$XESULA4FH{2SVIQW.jpg  软件架构设计文档  狂扁小朋友 | 编者  朱应山  日期  2017.5.9 |

目录

[1.团队名称 2](#_Toc477459052)

[2.文档更新记录： 2](#_Toc477459053)

[3.引言 2](#_Toc477459054)

[4.系统的分层架构 2](#_Toc477459055)

[4.1.系统的逻辑分层 2](#_Toc477459056)

[4.2.系统的架构设计 2](#_Toc477459057)

[5.接口的定义 4](#_Toc477459058)

[5.1.逻辑层接口的定义 4](#_Toc477459059)

[5.2.数据层接口的定义 5](#_Toc477459060)

[6 Vo与Po的定义 5](#_Toc477459061)

# 1.团队名称

狂扁小朋友

# 2.文档更新记录：

|  |  |  |  |
| --- | --- | --- | --- |
| 创建与修改 | 日期 | 备注 | 版本号 |
| 朱应山 | 2017-3-24 | 创建文档 | V1.0 |
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# 3.引言

|  |  |
| --- | --- |
| 内容和说明 |  |
| 编写目的 | 本文档提供股票量化交易系统的软件架构概览，采用若干架构视图叙述系统的不同方面，以便表示架构系统所需要的重要架构决策 |
| 对象和范围 | 本文档的读者是开发人员和管理人员，参考了RUP的《软件架构文档模版》，用于指导下一循环的代码开发和测试工作 |
| 参考文献 | 《软件需求规格说明书》 |
| 名词与术语 |  |

# 4.系统的分层架构

### 4.1.系统的逻辑分层

展示层：用于界面展示和配置的层次

逻辑层：包含业务逻辑以及逻辑控制的层次。

数据层：定义系统和存储系统中相关数据的层次。

### 4.2.系统的架构设计

系统架构中的对象分为以下几类：

1.UI对象，负责处理系统数据的展现和用户的交互

2.BL对象，提供服务的抽象接口，供展示层调用或传递组装好的数据

3.BLImpl对象，实现抽象接口

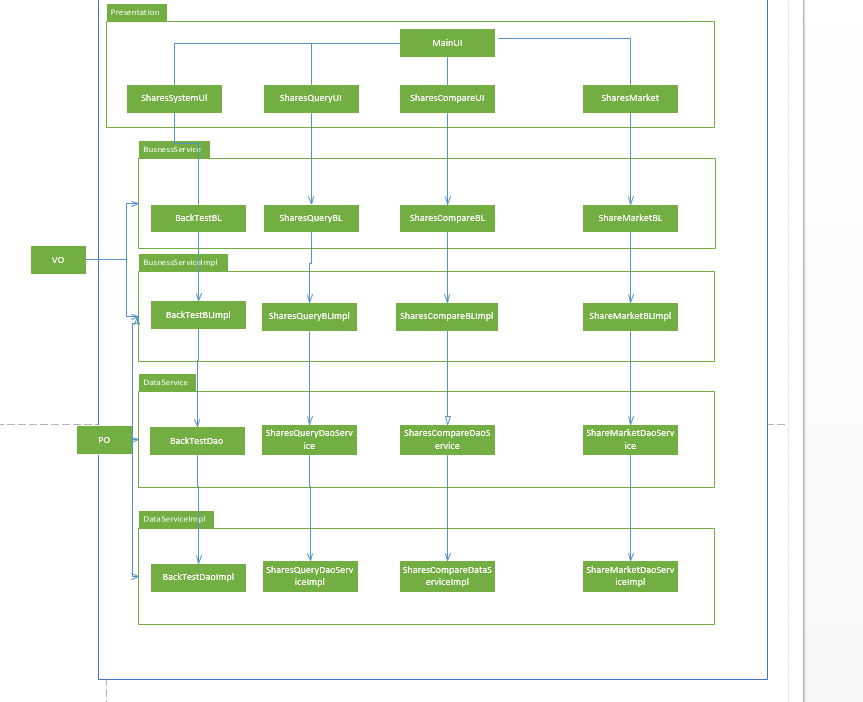
4.Po对象，用于数据层和逻辑层之间的数据传递

5.Vo对象，用于逻辑层和展示层之间的数据传递

6.Dao对象，负责提供数据层服务的接口，与数据库实体交互获取数据。

7.DaoImpl对象，实现Dao接口

设计包图如下



# 5.接口的定义

### 5.1.逻辑层接口的定义

|  |  |  |
| --- | --- | --- |
| SharesQueryBL |  |  |
| SharesQueryBL. sharesQuery | 语法 | public QueryVo sharesQuery(String id, String beginDate, String endDate) |
| 前置条件 | 传入的id符合规范 |
| 后置条件 | 返回查找的股票对应的vo，如果不存在返回null |
| SharesQueryBL. EMAData | 语法 | public Map<String ,Double > EMAData(String id,String beginDate,String endDate,int day) |
| 前置条件 | 传入的id符合规范,day为,5,10,20 |
| 后置条件 | 返回对应日期段的股票数据，以map形式存储 |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| SharesCompareBL |  |  |
| SharesCompareBL. compareSh | 语法 | public CompareVo[] compareSh(String id1,String id2,String beginDate,String endDate) |
| 前置条件 | 传入的id符合规范,日期符合规范 |
| 后置条件 | 返回id对应的两只股票该段时间内的比较信息 |
| SharesCompareBL. minAndMax | 语法 | public double[][] minAndMax(String id1,String id2,String beginDate,String endDate) |
| 前置条件 | 传入的id符合规范,日期符合规范 |
| 后置条件 | 返回一段时间内比较两股票的最高值、最低值，用二维数组表示[0][0]为股票1最高价[0][1]为最低[1][0]以此类推 |

|  |  |  |
| --- | --- | --- |
| SharesMarketBL |  |  |
| SharesMarketBL.market | 语法 | public MarketVo market(String date) |
| 前置条件 | 传入的日期符合规范 |
| 后置条件 | 返回当日市场行情的vo |

|  |  |  |
| --- | --- | --- |
| MomentBL |  |  |
| MomentBL.getMomentumResult | 语法 | public BackTestVo getMomentumResult(String beginDate,String endDate,int formDays,int holdDays,ArrayList<String> sharesList,String blockName); |
| 前置条件 | 传入的股票id存在，日期符合规范 |
| 后置条件 | 返回动量策略回测的结果 |

|  |  |  |
| --- | --- | --- |
| SharesAverStrategyBL |  |  |
| SharesAverStrategyBL. averStrategy | 语法 | public AverStrategyVo averStrategy(String beginDateString,String endDateString,ArrayList<String > sharesIDArrayList,int averDay,  int store,int transfer,String blockName); |
| 前置条件 | 传入的股票id存在，日期符合规范 |
| 后置条件 | 返回均值回归回测的结果 |

|  |  |  |
| --- | --- | --- |
| SharesBlockBL |  |  |
| SharesBlockBL.getSharesList | 语法 | public Map<String,String> getSharesList(String name) |
| 前置条件 | 传入的板块名称存在 |
| 后置条件 | 返回该板块下的所有股票，key表示id，val表示名字 |

### 5.2.数据层接口的定义

|  |  |  |
| --- | --- | --- |
| UserDao |  |  |
| UserDao.getLoginResult | 语法 | public LoginResult getLoginResult (String id,String password) |
| 前置条件 | 传入的id符合规范,password符合规范 |
| 后置条件 | 返回登陆结果 |
| UserDao.getRegisterResult | 语法 | public RegisterResult getRegisterResult (UserPo po) |
| 前置条件 | 传入的po符合规范 |
| 后置条件 | 返回注册结果 |
| UserDao.getUserPo | 语法 | Public UserPo getUserPo(String id) |
| 前置条件 | 传入id符合规范 |
| 后置条件 | 返回id对应的个人信息 |
| UserDao. updateUserPo | 语法 | Public updateResult updateUserPo (UserVo,vo) |
| 前置条件 | 传入的vo符合规范 |
| 后置条件 | 返回更改结果 |

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| --- | --- | --- |
| StrategyDao |  |  |
| StrategyDao.getStrategyPo | 语法 | public StrategyPo getStrategyPo(String strategyID) |
| 前置条件 | 传入的strategyID符合规范 |
| 后置条件 | 返回strategyID对应的策略信息 |
| StrategyDao.getMakeStrategyList | 语法 | public ArrayList <StrategyPo> getMakeStrategyList (String userID) |
| 前置条件 | 传入的userID符合规范 |
| 后置条件 | 返回userID对应用户制定的策略信息 |
| StrategyDao.getStoreStrategyList | 语法 | public ArrayList <StrategyPo> getStoreStrategyList (String userID) |
| 前置条件 | 传入的strategyID符合规范 |
| 后置条件 | 返回userID对应用户收藏的策略信息 |
| StrategyDao.updateStrategy | 语法 | public UpdateResult updateStrategy (StrategyPo po) |
| 前置条件 | 传入的po符合规范 |
| 后置条件 | 更新数据库，并返回更新结果 |
| StrategyDao.getAllStrategy | 语法 | public ArrayList <StrategyPo> getAllStrategy () |
| 前置条件 | 无 |
| 后置条件 | 返回数据库中所有的策略列表 |
| StrategyDao.deleteStrategy | 语法 | public Boolean deleteStrategy (String strategyID) |
| 前置条件 | 传入的strategyID符合规范 |
| 后置条件 | 返回删除strategyID对应策略的结果 |
| StrategyDao.addStoreStrategy | 语法 | public Boolean addStoreStrategy (String userID, String strategyID) |
| 前置条件 | 传入的strategyID，userID符合规范, |
| 后置条件 | 返回用户收藏策略的结果 |
| StrategyDao.cancelStoreStrategy | 语法 | public StrategyPo cancelStoreStrategy (String userID, String strategyID) |
| 前置条件 | 传入的strategyID符合规范 |
| 后置条件 | 返回strategyID对应的策略信息 |
| StrategyDao.addStrategy | 语法 | public Boolean cancelStoreStrategy (StrategyPo po) |
| 前置条件 | 传入的po符合规范 |
| 后置条件 | 返回制定po的结果息 |

|  |  |  |
| --- | --- | --- |
| SharesDao |  |  |
| SharesDao.getSharesData | 语法 | public ArrayList<SharesData> getSharesData (Arraylist<String> IDList,String beginDate,String endDate) |
| 前置条件 | 传入的日期和IDList符合规范 |
| 后置条件 | 返回ID，开始日期和结束日期所对应的股票数据 |
| SharesDao.updateSharesData | 语法 | public UpdateResult updateSharesData (ArrayList<SharesData> list) |
| 前置条件 | 传入的list符合规范,日期符合规范 |
| 后置条件 | 返回更新结果 |

# 6 Vo与Po的定义

代码如下：

**ComparePo**

|  |
| --- |
| package vopo;  import java.util.ArrayList;  import java.util.Map;  import Data.daoImpl.SharesData;  public class ComparePo {  private String stockName;  private String stockNum;  private String beginDate;  private String endDate;  private ArrayList<SharesData> datas;    public ComparePo(String stockName, String stockNum, String beginDate, String endDate, ArrayList<SharesData> datas) {  this.stockName = stockName;  this.stockNum = stockNum;  this.beginDate = beginDate;  this.endDate = endDate;  this.datas = datas;  }  public String getStockName() {  return stockName;  }  public void setStockName(String stockName) {  this.stockName = stockName;  }  public String getStockNum() {  return stockNum;  }  public void setStockNum(String stockNum) {  this.stockNum = stockNum;  }  public String getBeginDate() {  return beginDate;  }  public void setBeginDate(String beginDate) {  this.beginDate = beginDate;  }  public String getEndDate() {  return endDate;  }  public void setEndDate(String endDate) {  this.endDate = endDate;  }  public ArrayList<SharesData> getDatas() {  return datas;  }  public void setDatas(ArrayList<SharesData> datas) {  this.datas = datas;  }    } |

**CompareVo**

|  |
| --- |
| **package vopo;**  **import java.util.Map;**  **/\*\***  **\* @author 朱润之**  **\* 比较功能的vo**  **\*/**  **public class CompareVo {**  **private String stockName;**  **private String stockNum;**  **private String beginDate;**  **private String endDate;**  **private Map<String, Double> minPrice;**  **private Map<String, Double> maxPrice;**  **private Map<String, Double> openPrice; //开盘价**  **private Map<String, Double> closePrice; //收盘价**  **private double increase; //涨幅**  **//跌幅**  **private Map<String, Double>logReturn; //对数收益率**  **private double logReturn\_Var; //对数收益率方差**  **public CompareVo(){**    **}**          **public CompareVo(String stockName, String stockNum, String beginDate, String endDate, Map<String, Double> minPrice,**  **Map<String, Double> maxPrice, Map<String, Double> openPrice, Map<String, Double> closePrice,**  **double increase, Map<String, Double> logReturn, double logReturn\_Var) {**  **this.stockName = stockName;**  **this.stockNum = stockNum;**  **this.beginDate = beginDate;**  **this.endDate = endDate;**  **this.minPrice = minPrice;**  **this.maxPrice = maxPrice;**  **this.openPrice = openPrice;**  **this.closePrice = closePrice;**  **this.increase = increase;**  **this.logReturn = logReturn;**  **this.logReturn\_Var = logReturn\_Var;**  **}**  **public String getStockName() {**  **return stockName;**  **}**  **public void setStockName(String stockName) {**  **this.stockName = stockName;**  **}**  **public String getStockNum() {**  **return stockNum;**  **}**  **public void setStockNum(String stockNum) {**  **this.stockNum = stockNum;**  **}**  **public String getBeginDate() {**  **return beginDate;**  **}**  **public void setBeginDate(String beginDate) {**  **this.beginDate = beginDate;**  **}**  **public String getEndDate() {**  **return endDate;**  **}**  **public void setEndDate(String endDate) {**  **this.endDate = endDate;**  **}**  **public Map<String, Double> getMinPrice() {**  **return minPrice;**  **}**  **public void setMinPrice(Map<String, Double> minPrice) {**  **this.minPrice = minPrice;**  **}**  **public Map<String, Double> getMaxPrice() {**  **return maxPrice;**  **}**  **public void setMaxPrice(Map<String, Double> maxPrice) {**  **this.maxPrice = maxPrice;**  **}**  **public Map<String, Double> getOpenPrice() {**  **return openPrice;**  **}**  **public void setOpenPrice(Map<String, Double> openPrice) {**  **this.openPrice = openPrice;**  **}**  **public Map<String, Double> getClosePrice() {**  **return closePrice;**  **}**  **public void setClosePrice(Map<String, Double> closePrice) {**  **this.closePrice = closePrice;**  **}**  **public double getIncrease() {**  **return increase;**  **}**  **public void setIncrease(double increase) {**  **this.increase = increase;**  **}**  **public Map<String, Double> getLogReturn() {**  **return logReturn;**  **}**  **public void setLogReturn(Map<String, Double> logReturn) {**  **this.logReturn = logReturn;**  **}**  **public double getLogReturn\_Var() {**  **return logReturn\_Var;**  **}**  **public void setLogReturn\_Var(double logReturn\_Var) {**  **this.logReturn\_Var = logReturn\_Var;**  **}**          **}** |

**MarketPo**

|  |
| --- |
| **package vopo;**  **import java.util.ArrayList;**  **import Data.daoImpl.SharesData;**  **public class MarketPo {**  **private String date;**  **private ArrayList<SharesData> stockList;**  **public MarketPo(String date, ArrayList<SharesData> stockList) {**  **this.date = date;**  **this.stockList = stockList;**  **}**  **public String getDate() {**  **return date;**  **}**  **public void setDate(String date) {**  **this.date = date;**  **}**  **public ArrayList<SharesData> getStockList() {**  **return stockList;**  **}**  **public void setStockList(ArrayList<SharesData> stockList) {**  **this.stockList = stockList;**  **}**    **}** |

**MarketVo**

|  |
| --- |
| package vopo;  public class MarketVo {  String date; //日期  long totalVolume; //当日总交易量  double numOfUp10; //涨停股票数  double numOfDrop10; //跌停股票数  double numOfUp5; //涨5%的股票数  double numOfDrop5; //跌5%的股票数  double numOfDisL; //开盘-收盘大于5%的股票数  double numOfDisS; //开盘-收盘小于5%的股票数  public MarketVo(){    }      public MarketVo(String date, long totalVolume, double numOfUp10, double numOfDrop10, double numOfUp5,  double numOfDrop5, double numOfDisL, double numOfDisS) {  super();  this.date = date;  this.totalVolume = totalVolume;  this.numOfUp10 = numOfUp10;  this.numOfDrop10 = numOfDrop10;  this.numOfUp5 = numOfUp5;  this.numOfDrop5 = numOfDrop5;  this.numOfDisL = numOfDisL;  this.numOfDisS = numOfDisS;  }  public MarketVo(String date) {  this.date = date;  // TODO Auto-generated constructor stub  }  public String getDate() {  return date;  }  public void setDate(String date) {  this.date = date;  }    public long getTotalVolume() {  return totalVolume;  }  public void setTotalVolume(long totalVolume) {  this.totalVolume = totalVolume;  }  public double getNumOfUp10() {  return numOfUp10;  }  public void setNumOfUp10(double numOfUp10) {  this.numOfUp10 = numOfUp10;  }  public double getNumOfDrop10() {  return numOfDrop10;  }  public void setNumOfDrop10(double numOfDrop10) {  this.numOfDrop10 = numOfDrop10;  }  public double getNumOfUp5() {  return numOfUp5;  }  public void setNumOfUp5(double numOfUp5) {  this.numOfUp5 = numOfUp5;  }  public double getNumOfDrop5() {  return numOfDrop5;  }  public void setNumOfDrop5(double numOfDrop5) {  this.numOfDrop5 = numOfDrop5;  }  public double getNumOfDisL() {  return numOfDisL;  }  public void setNumOfDisL(double numOfDisL) {  this.numOfDisL = numOfDisL;  }  public double getNumOfDisS() {  return numOfDisS;  }  public void setNumOfDisS(double numOfDisS) {  this.numOfDisS = numOfDisS;  }    } |

**QueryPo**

|  |
| --- |
| package vopo;  import java.util.ArrayList;  import Data.daoImpl.SharesData;  public class QueryPo {  private String name;  private String id;  private String beginDate;  private String endDate;  private ArrayList<SharesData> dataList;  public QueryPo(String name, String id, String beginDate, String endDate, ArrayList<SharesData> dataList) {  this.name = name;  this.id = id;  this.beginDate = beginDate;  this.endDate = endDate;  this.dataList = dataList;  }  public String getName() {  return name;  }  public void setName(String name) {  this.name = name;  }  public String getId() {  return id;  }  public void setId(String id) {  this.id = id;  }  public String getBeginDate() {  return beginDate;  }  public void setBeginDate(String beginDate) {  this.beginDate = beginDate;  }  public String getEndDate() {  return endDate;  }  public void setEndDate(String endDate) {  this.endDate = endDate;  }  public ArrayList<SharesData> getDataList() {  return dataList;  }  public void setDataList(ArrayList<SharesData> dataList) {  this.dataList = dataList;  }    } |

QueryVo

|  |
| --- |
| package vopo;  import java.util.Map;  public class QueryVo {    private String name;  private String id;  private String beginDate;  private String endDate;  private Map<String, Double> openPrice;  private Map<String, Double> closePrice;  private Map<String, Double> highPrice;  private Map<String, Double> lowPrice;  private Map<String, Integer> volume;  public QueryVo(String name, String id, String beginDate, String endDate, Map<String, Double> openPrice,  Map<String, Double> closePrice, Map<String, Double> highPrice, Map<String, Double> lowPrice,Map<String, Integer> volume) {  this.name = name;  this.id = id;  this.beginDate = beginDate;  this.endDate = endDate;  this.openPrice = openPrice;  this.closePrice = closePrice;  this.highPrice = highPrice;  this.lowPrice = lowPrice;  this.volume = volume;  }  public String getName() {  return name;  }  public void setName(String name) {  this.name = name;  }  public String getId() {  return id;  }  public void setId(String id) {  this.id = id;  }  public String getBeginDate() {  return beginDate;  }  public void setBeginDate(String beginDate) {  this.beginDate = beginDate;  }  public String getEndDate() {  return endDate;  }  public void setEndDate(String endDate) {  this.endDate = endDate;  }  public Map<String, Double> getOpenPrice() {  return openPrice;  }  public void setOpenPrice(Map<String, Double> openPrice) {  this.openPrice = openPrice;  }  public Map<String, Double> getClosePrice() {  return closePrice;  }  public void setClosePrice(Map<String, Double> closePrice) {  this.closePrice = closePrice;  }  public Map<String, Double> getHighPrice() {  return highPrice;  }  public void setHighPrice(Map<String, Double> highPrice) {  this.highPrice = highPrice;  }  public Map<String, Double> getLowPrice() {  return lowPrice;  }  public void setLowPrice(Map<String, Double> lowPrice) {  this.lowPrice = lowPrice;  }  public Map<String, Integer> getVolume() {  return volume;  }  public void setVolume(Map<String, Integer> lowPrice) {  this.volume = volume;  }    } |